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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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11/09/2001

Paul Berger

C1043/7032

9935

7590

12/13/2004

Finnegan, Henderson, Farabow, Garrett & Dunner
1300 I Street, NW
Washington, DC 20005-3315

EXAMINER

LEURIG, SHARLENE L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/857,698	BERGER ET AL.	
	Examiner	Art Unit	
	Sharlene Leurig	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on September 22, 2004 has been entered and acknowledged by the Examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 43-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (JP 08-222374) (of record) in view of Michaelson, H. *"The work function of the elements and its periodicity"* (of record).

Regarding claim 43, Nakamura discloses a light emissive device comprising a light-emissive region (Figure 1, element 4), a first electrode (2 and 3) located on a viewing side of the light-emissive region for injecting charge carriers of a first type, a second electrode (6) located on a non-viewing side of the light-emissive region for injecting charge carriers of a second type, and wherein there is a reflectivity-influencing structure (5) located on the non-viewing side of the light-emissive region and including a light absorbent layer comprising an oxide of a metal having a work function of 4.0 eV or less, including metals such as the alkaline earth metals sodium, potassium and calcium (paragraphs 0009-0011).

Nakamura lacks explicit disclosure of the work functions of the metal oxides that can be used for the reflectivity-influencing structure.

Michaelson teaches that the work function of the sodium is equal to 1.75 eV, the work function of potassium is equal to 2.30 eV, and the work function of calcium is equal to 2.87 eV, each of which fits within the claimed range of 3.5 eV or less.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reflectivity-influencing structure of Nakamura, being made of an oxide of sodium, potassium or calcium, to have a work function less than or equal to 3.5 eV, as Michaelson teaches it to be characteristic of these elements.

Regarding claim 44, Nakamura discloses the first electrode (2) is light-transmissive (paragraph 0007).

Regarding claim 45, Nakamura discloses the reflectivity-influencing structure is located on the opposite side of the second electrode from the light-emissive region, where the cathode is interpreted as comprising both an electron injection layer and a metal layer, with the reflectivity-influencing structure formed between these layers (paragraph 0019). Therefore the reflectivity-influencing structure can be said to be on the opposite side of the second electrode from the light-emissive region.

Regarding claim 46, Nakamura discloses the second electrode is partially light-transmissive (paragraph 0015).

Regarding claim 47, Nakamura discloses the thickness of the second electrode can be 10 nm, which is less than 30 nm (paragraph 0015).

Regarding claim 48, Nakamura discloses the reflectivity-influencing structure is adjacent the second electrode (paragraph 0019).

Regarding claim 49, Nakamura discloses the second electrode provides the reflectivity-influencing structure, since it is couched within the second electrode in one embodiment (paragraph 0019).

Regarding claims 50 and 51, Nakamura discloses the second electrode comprises an oxide of a low-work function metal such as aluminum (paragraph 0015).

Regarding claim 52, Nakamura discloses the reflectivity-influencing structure is effective to absorb light emitted from the light-emissive region that reaches it through the second electrode or incident light (paragraphs 0008 and 0025).

Regarding claim 53, Nakamura discloses the presence of the reflectivity-influencing structure adjacent the second electrode renders the second electrode substantially non-reflective to light emitted from the light-emissive region or incident light, since the presence of the reflectivity-influencing structure reduces the internal reflection of light (paragraph 0025).

Regarding claim 54, Nakamura discloses the second electrode comprises an electrically conductive material, since it is made of metal (paragraph 0013).

Regarding claim 55, Nakamura discloses the light-emissive region comprises an organic light-emissive material (paragraph 0001).

Regarding claims 56 and 57, Nakamura discloses the light-emissive region comprises a polymer light-emissive material, such as a conjugated polymer material (paragraph 0016).

Regarding claim 58, Nakamura discloses the reflectivity-influencing structure is electrically conductive (paragraph 0005).

Response to Arguments

4. Applicant's arguments with respect to claims 43-58 have been considered but are not persuasive.

Applicant has argued that the examiner's prior rejection of claims 1-16, which contain the same limitations as standing claims 43-58, as being obvious over Nakamura JP 08222374A in view of the Michaelson reference above, is improper. Applicant argues that Nakamura fails to disclose a light absorbent layer comprising a fluoride or oxide of a metal having a work function of 3.5 eV or less (page 6), and argues that Nakamura discloses graphite as the light absorbing material rather than a metal oxide. The examiner directs applicant to paragraph 0011 of Nakamura, which discloses a calcium, potassium or sodium oxide as part of a layer having light absorbing qualities. Furthermore, applicant admits that Nakamura discloses the compound of Formula I as the light absorbing material; the compound of Formula I contains calcium, potassium or sodium oxide, as discussed above. The oxides referenced by the applicant in paragraphs 0014 and 0015 are not relied upon for the rejection of claim 43. Therefore the rejection is considered to be proper.

Art Unit: 2879

Conclusion


5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (571) 272-2455. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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